MARYLAND COOPERATIVE EXTENSION
Fact Sheet

Fact Sheet 702

Lawns and the Chesapeake Bay

Your lawn can help prevent pollution from reaching Maryland's streams and rivers and the Chesapeake Bay.

A healthy, dense stand of grass slows the flow of water running off the landscape, allowing it to soak in. Grass roots form a mat that holds the soil and filters water, trapping sediments and chemicals before they have a chance to cause water pollution.

Here are the basics to protect our water while you keep your lawn in good shape:

- The Soil Test
- The Right Type of Grass for Your Maryland Lawn
- A Proper Feeding Program
- The Way to Mow and Other Important Tips

The Soil Test: pH and Nutrition

A soil test report will provide the pH, nutrient content, and texture of your soil. The pH reading indicates soil acidity or alkalinity. The best pH levels for healthy grass range from 6.0 to 6.5. Most frequently, pH is too low and the soil needs an application of limestone. A recommendation included with soil test results will indicate how to reach the proper pH level.

Existing nutrient content and soil texture must be determined before effective and

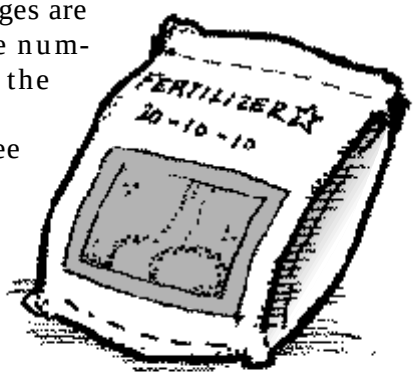
efficient recommendations can be made as to the amount and type of fertilizer or other material that should be applied to a lawn.

Have your soil tested every 3 to 5 years. Call the Home and Garden Information Center at 1-800-342-2507 to receive the test materials.

Lawn Grasses for Maryland

Turf-type tall fescue and zoysiagrass are two lawn grasses that generally resist damage from insects and diseases and can be maintained with lower amounts of fertilizer. For a lawn that needs minimal management, or for areas in shade, a fine fescue may be suitable. Many improved varieties of lawn grasses are available. For a list of those that are recommended for Maryland, call the Home and Garden Information Center at 1-800-342-2507. Buy quality seed. Check the weed seed content on the label. Quality seed will have no more than .05 percent weed seed included.

Lawn Fertilizer: What Kind, When, and How Much



Fertilizer packages are labeled with three numbers that indicate the percentage by weight of the three nutrients most essential to plants. The order is always nitrogen, phosphate, and potash. Nitrogen promotes overall grass shoot growth. Phosphate supplies phosphorus, which promotes strong root growth. Potash supplies potassium and helps grass withstand stresses such as drought or disease. The chemical symbol for nitrogen is N; phosphate is P_2O_5; potash is K_2O.

Recommendations provided with soil test results will tell you if you need to apply phosphorus and potassium. You may not need to add these two nutrients every year. Most lawn grasses need to have some nitrogen added annually in order to insure proper growth and resistance to pests.

Too much fertilizer, and fertilizer applied at the wrong time can harm your lawn instead of helping. Excess fertilizer causes rapid, lush growth that is more susceptible to diseases and more attractive to pests.

Slow-Release Nitrogen Sources

The nitrogen in fertilizer can be in a water soluble or a water insoluble form. Slow release nitrogen sources are fertilizers that have 40 percent or more of their nitrogen as water insoluble (WIN). Water insoluble sources provide nitrogen over a longer period than soluble sources. The result is more uniform plant growth, less chance of injury to the grass, and less potential for nitrate leaching.

Among your choices of slow release nitrogen sources are:

- Materials made from manure, sewage sludge, or composted plant or animal products. The nitrogen content of these materials ranges from very low to around 10%.
- Sulfur-coated urea 34-38% Nitrogen
- Resin-coated urea 24-35% Nitrogen
- IBDU 30-31% Nitrogen
- Ureaformaldehyde and Methylene ureas 20-38% Nitrogen

Determining the Percentage of WIN (Water Insoluble Nitrogen)

A fertilizer label may supply the following information: 20-10-10

Guaranteed analysis

Total nitrogen	20 percent
Water insoluble nitrogen	8 percent
Available phosphates	10 percent
Water soluble potash	10 percent

A soil test is a simple, inexpensive way to take the guesswork out of lawn care.

To calculate the percentage of WIN, divide the percent of water insoluble nitrogen by the percentage of total nitrogen and multiply by 100. In this case the result is (8 percent ÷ 20 percent x 100 = 40 percent). This fertilizer contains 40 percent WIN; therefore, it is considered a slow release nitrogen source.

Fertilizer Timing

Cool season grasses (fescues, bluegrass, ryegrass) should be fertilized primarily in the late summer or early fall. This period is important for recovery from summer stresses. Late summer/early fall applications may reduce runoff and leaching potential because rainfall patterns, temperature, and plant growth rate tend to maximize nitrogen uptake. The warm season grasses, zoysiagrass and bermudagrass, should be fertilized in the early summer because that is when they are most actively growing.

Fertilizer and Water Quality

Fertilizer, when applied to a healthy lawn at recommended rates, normally will not threaten groundwater or surface water. If your soil is sandy or if you live in an area with a high water table, try to use a slow release nitrogen source and do not apply more than 1 pound of nitrogen per 1000 square feet in any one application.

The large amount of paved area in cities and suburbs provides a direct route for nutrients and other pollutants to enter streams, rivers, and the Bay. Careful application of fertilizer is one way you can prevent pollution. Follow these tips to make sure the fertilizer you use remains on the lawn and out of the water:

- Try to keep fertilizer off of paved surfaces. If granular fertilizer gets onto paved surfaces, collect it for later use or sweep it onto the lawn.
- Use a drop spreader instead of a rotary spreader in restricted spaces, especially when near water, driveways, or sidewalks.
- Calibrate your spreader to make sure you are not over-applying fertilizer.
- Fill and wash spreaders over grassy areas, not on hard surfaces.
- Avoid getting fertilizer into natural drainage areas on your property.
- Never apply fertilizer to frozen ground or dormant lawns.
- Do not use fertilizer to melt ice and avoid ice melting products that contain nitrogen. Refer to the Home and Garden Information Center's fact sheet on ice melting products for more information.

A Few More Things You Should Know

Grasscycling

Leave grass clippings on the lawn; it recycles nutrients. If you leave clippings on the lawn for 2 years or longer, you may be able to lower the amount of nitrogen fertilizer you use by 25 percent or more. Try to keep grass clippings and other lawn debris out of street gutters. If washed away with storm water, they can add nutrients to surface water.

Mowing

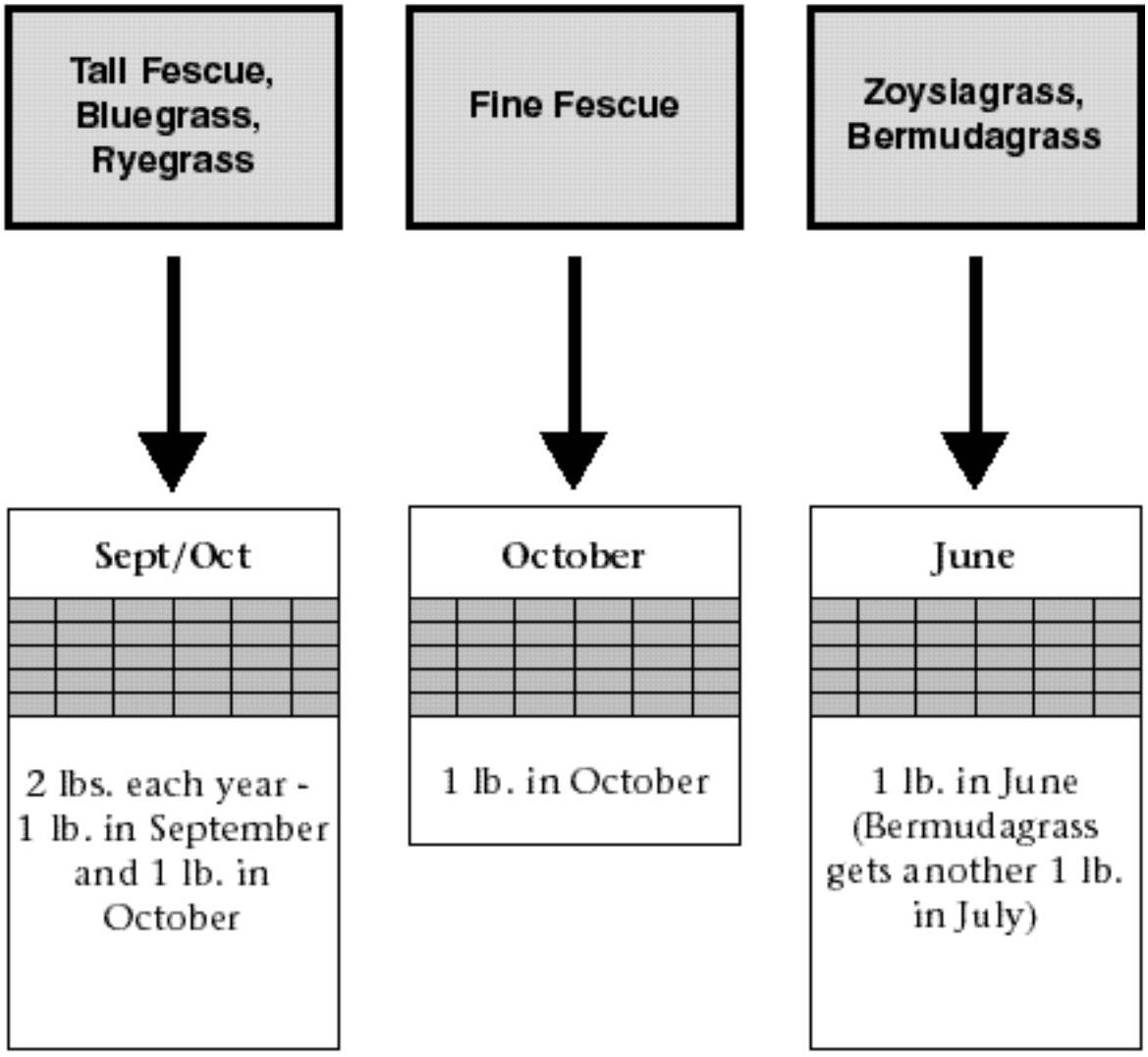
Low and infrequent mowing may be the major cause of lawn deterioration. It is best to remove no more than ⅓ of the grass blade each time you mow. For example, to maintain a 3-inch height, do not let the grass get much taller than 4 inches. Mowing to the proper height can reduce weed problems by as much as 50 to 80 percent.

Mowing Guide

	Spring & Summer	Fall & Winter
Tall Fescue	2½-3½ in.	2½in.
Perennial Ryegrass	2½-3	2-2½
Kentucky Bluegrass	2½-3	2-2½
Fine Fescue	2½-3½	2½
Bermudagrass	½-1	½-1½
Zoysiagrass	½-1	½-1½

Basic Fertilizer Plan

Pounds of Nitrogen per 1000 sq. ft.



Optional Applications

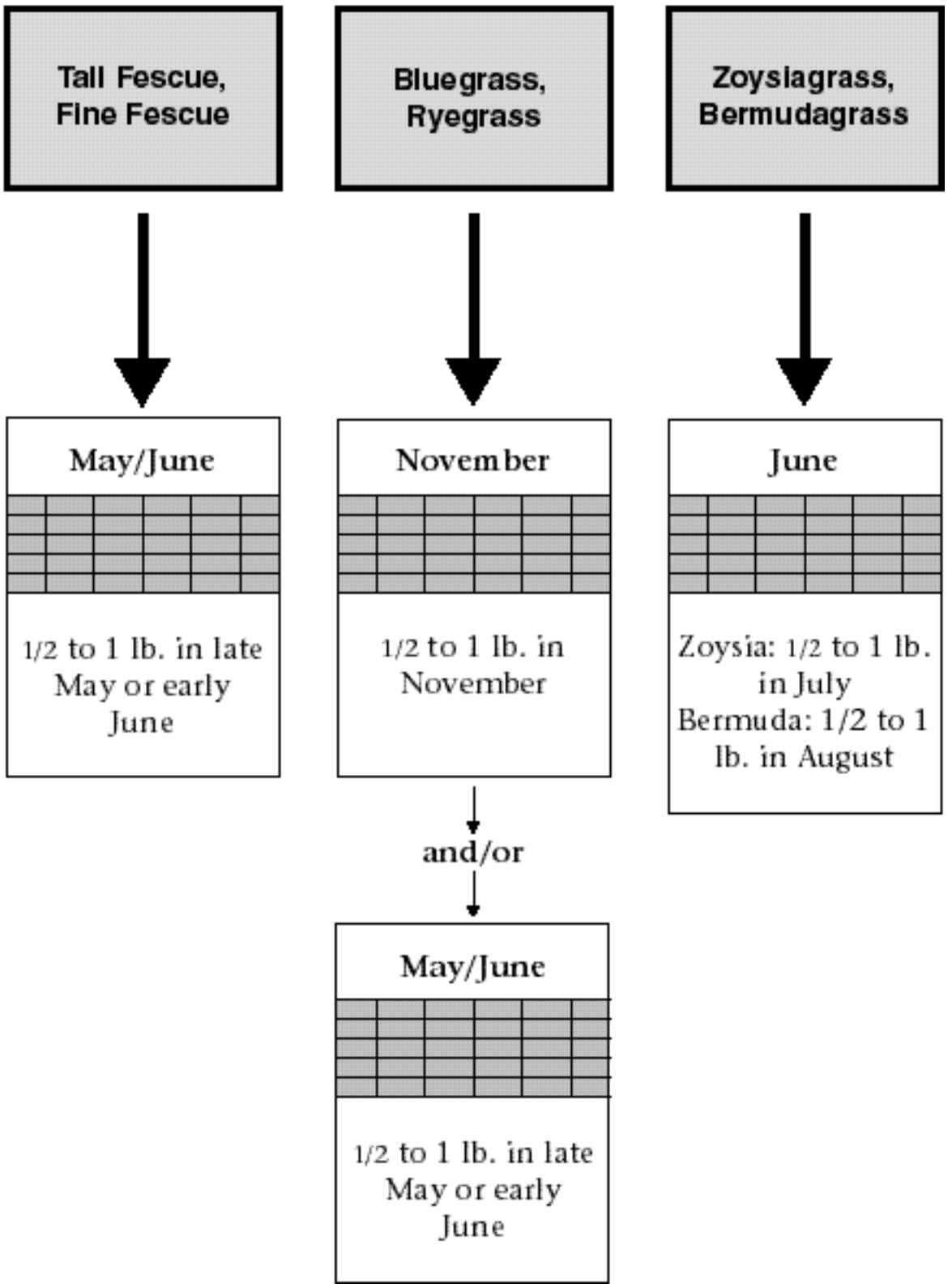
The fertilizer plans listed above are generally the minimal amounts of fertilizer needed for maintaining mature lawns in Maryland. Tall fescue and particularly Kentucky bluegrass may need moderate additional applications of fertilizer to maintain density and resist pest problems. The optional applications that follow may help your lawn if:

- clippings are removed (see page 3),
- there is a severe crabgrass problem,
- the lawn is heavily used,
- there has been pest or other damage,
- the lawn is new (the first 2-3 years).

Do not forget that practices that keep lawns healthy, like proper mowing, can also reduce the need for fertilizer. If you apply fertilizer in November or late Spring, consider using a slow release nitrogen source.

Optional Applications

Pounds of Nitrogen per 1000 sq. ft.



Unless you have bluegrass, it is safe to let an established lawn go dormant during dry periods. Dormancy is a survival mechanism and your lawn will usually recover when rainfall returns. Dormant lawns continue to protect water quality by holding soil and potential pollutants.

Watering

Once you have an established lawn, water only when needed rather than on a schedule. Water if the grass develops a blue-gray color or when it leaves footprints after being walked upon. Water slowly, preferably in the early morning. Wet the soil to a 4-6 inch depth. You can check the depth with a screwdriver. Shallow and infrequent watering, or watering in the evening, can damage your lawn. Do not allow water from a sprinkler or hose to run onto paved surfaces.

Calibrate Your Spreader

Spreader instructions and fertilizer packages may supply recommended settings for various application rates. If the information is not provided, you will have to calibrate your spreader to insure proper application. Once you have calibrated for a particular product, mark the setting on your spreader or on the product bag so you will have it for the next application.

Drop spr eader

1. Measure the width of your spreader.
2. Mark off the distance needed to make the spreader cover 100 square feet. For example, if your spreader is 2 feet wide, the distance is 50 feet. For 1- and 3-foot spreaders, the distances are 66 ⅔ and 33 ⅓ feet.
3. Attach a catch pan to the spreader. A piece of cardboard folded into a V shape works well.*
4. Set the spreader to a low setting.
5. Make sure the hopper is closed, then fill it with a few pounds of the material you intend to spread.
6. Starting 10 feet before the 100-square-foot test area, push the spreader and open the hopper as you reach the starting point. Close the hopper as you go over the finish line.
7. Weigh the collected amount of fertilizer and multiply by 10. The result is the amount of fertilizer that would be spread per 1000 square feet.
8. Compare this result with your target application rate and, if necessary, adjust the spreader to deliver more or less.
9. Repeat Steps 5-8 until you reach the desired application rate.

*Another method is to run the test on a paved surface. If you do, make sure you sweep up as much of the fertilizer as possible.

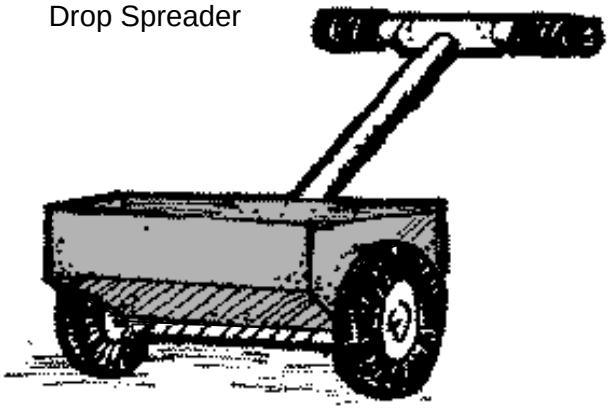
Example for a drop spreader using fer tilizer that is 20% nitr ogen:

- Spreader width is 2 feet.
- Mark off 50 feet to get a 100-square-foot test area.
- At Step 7 you find you dispensed ½ pound of material.
- Multiply this number by 10 to get the application per 1000 square feet:

  ½ x 10 = 5

- The application rate is 5 pounds of material per 1000 square feet. This would supply one pound of nitrogen (5 pounds of material x 20% nitrogen = 1 pound of nitrogen).

Drop Spreader



To avoid missing parts of the lawn and to obtain a uniform application, calibrate your spreader to deliver ½ of the desired rate. Then cover the lawn twice. Make the first application in one direction and a second application at a right angle to the first.

Rotary spreader

1. Fill spreader with a few pounds of the material.
2. Measure the width of application. A second person can watch and mark how far the material is thrown to the sides of the spreader.
3. Empty the hopper.
4. Measure a distance that when multiplied by the width of application from Step 2 results in 1000. For example, if the application width is 10 feet (5 on each side of the spreader), mark off a 100-foot strip (10 x 100 = 1000).
5. Fill the hopper with a known weight of material.
6 Beginning 10 feet before the starting line, push the spreader and open the hopper as you reach the starting line. Close the hopper as you go over the finish line.
7. Empty the remaining material onto a plastic sheet, transfer it to a bucket and weigh the material.
8. Subtract the weight found at Step 7 from the starting weight. The result is the weight of material dispensed per 1000 square feet.
9. Compare this rate with the target application rate. If necessary, adjust the spreader setting to deliver more or less.
10. Repeat Steps 4-9 until the desired rate is achieved.

Rotary spreader

Example for a rotary spreader using fertilizer that is 33% nitrogen:

- The application width is 8 feet (4 feet on each side).
- Place 5 pounds of material in the hopper.
- Divide 1000 by 8 (the application width) to find the length of test area needed to get 1000 square feet:

  1000 ÷ 8 = 125

  125 feet x the 8-foot application width = 1000 square feet
- After making one pass with the spreader you weigh the material left in the hopper and find 2 pounds.
- When you subtract 2 pounds from the starting weight of 5 pounds, you find that 3 pounds were dispensed.
- The application rate is 3 pounds of material per 1000 square feet. This would supply 1 pound of nitrogen (3 pounds of material x 33% nitrogen = 1 pound of nitrogen).

References:

Dernoeden, P., "AM90—General Guidelines for Lawn Maintenance in Maryland," University of Maryland Cooperative Extension Service, 1993.

"Easy Reference to Sustainable Landscape Management and Water Quality Protection," Virginia Cooperative Extension, 1994.

McCarty, L.B. and Sartain, J.B., "How to Calibrate Your Fertilizer Spreader," Florida Lawn Handbook, University of Florida, Institute of Food and Agricultural Sciences, 1995.

Turner, T., "AM77—Turfgrass Cultivar Recommendations for Certified Sod and Professional Seed Mixtures in Maryland," University of Maryland CES, 1995.

Turner, T., and Hellman, J.L., FS637—"Effective Lawn Care With Reduced Pesticide and Fertilizer Use," University of Maryland CES, 1992.

"Yard Care and the Environment Series," University of Wisconsin, Extension, 1993.

HAVE A LAWN OR GARDEN QUESTION?
CALL THE HOME AND GARDEN
INFORMATION CENTER AT
1-800-342-2507

Lawns and the Chesapeake Bay
by
Thomas R. Turner
turfgrass specialist
Department of Natural Resource Sciences
and Landscape Architecture
University of Maryland

Peter J. Ricciuti
faculty Extension assistant
Home and Garden Information Center

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, University of Maryland, College Park, and local governments. Thomas A. Fretz, Director of Maryland Cooperative Extension, University of Maryland.

The University of Maryland is equal opportunity. The University's policies, programs, and activities are in conformance with pertinent Federal and State laws and regulations on nondiscrimination regarding race, color, religion, age, national origin, sex, and disability. Inquiries regarding compliance with Title VI of the Civil Rights Act of 1964, as amended; Title IX of the Educational Amendments; Section 504 of the Rehabilitation Act of 1973; and the Americans With Disabilities Act of 1990; or related legal requirements should be directed to the Director of Personnel/Human Relations, Office of the Dean, College of Agriculture and Natural Resources, Symons Hall, College Park, MD 20742.

P96/V97/R99